

## **SPECIAL SPECIFICATION**

### **SECTION 13872S**

#### **LIQUID LEAK DETECTION SYSTEM**

##### **PART 1 - GENERAL**

###### **1.01 SECTION INCLUDES**

- A. Liquid leak detection system. The system shall include wiring, detectors, other accessories and miscellaneous items required for a complete functioning system. Note: For tool install requirements, Liquid Leak Detection System, if required, shall be an extension of base-build Liquid Leak Detection System herein described.

###### **1.02 REFERENCES/PROJECT REQUIREMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Requirements of the following Project Specification Sections apply to this section:
  - 1. Section 13085S – Seismic Supports
  - 2. Section 13870S – HPM Monitoring and Control System
  - 3. Section 16120 - Controls Cabling and Wireways.

###### **1.03 DEFINITIONS**

Not Used.

###### **1.04 SYSTEM DESCRIPTION**

- A. The completed liquid leak detection system shall operate in a local automatic fashion. The system shall provide alarm and supervisory relay closure information to the HPM monitoring and control system. See Section 13854, Hazardous Production Material Monitoring And Control System, for additional details.
- B. Continuous sensing capable of reporting multiple leaks along a single sensing cable shall be done by sensing cable reporting alarms to the control panel indicating approximate location of leak along cable length.

- C. Sensing shall be accomplished by detector cable lengths installed within annular space of double-contained pipe, containment trenches, or designated floor areas as shown on the Drawings.
- D. Zoned sensing shall be done by zone branches reporting the alarms to the control panel(s) indicating the zone number(s) at the occurrence of a leak.
- E. Sensor cable shall be chemically resistant, suitable for detection of acids, bases, solvents, and water per detection requirements.
- F. The system shall be composed of: sensing cable(s), jumper cable(s), leader cable(s), and alarm/locator panels. Alarm/locator panel shall have output relays for alarm and supervisory signals to the HPM monitoring information extended to HPM monitoring and control system. A continuity relay shall be provided within the alarm/locator panel.
- G. Sump low point detection shall be accomplished by float switch contact signals to the HPM monitoring and control system.
- H. The system shall include wiring, raceways, pull boxes, hand-holes, terminal cabinets, outlet and mounting boxes, control equipment, detectors, and all other accessories and miscellaneous items required for a complete, operational system.

#### 1.05 QUALIFICATIONS

- A. Installer: Electrical subcontractor experienced in liquid leak detection systems with three years documented experience, certified, trained, and approved by the manufacturer of the basic system.

#### 1.06 SUBMITTALS

- A. Provide Submittals in accordance with Conditions of Contract and Section 01300S:
- B. Provide calibration data and procedures for all sensors, switches, and controllers as part of submittals.
- C. Provide control diagrams in the form of shop drawings for each system or sub-system. Use the control diagrams included in the contract drawings for this purpose. Each diagram shall be altered to show all proposed controls and controlled devices, together with name, catalog number, set point, and actions performed.
- D. The contractor will be furnished reproducible copies of all contract drawings for use in preparing his shop drawings.

- E. The contractor shall provide preliminary submittals detailing the software functions that will be performed by the various components within the system. The submittal shall include a repetition of all functions required by the drawings and specifications as well as details on the implementation of each required measurement or control action. Descriptions of the SCADA interface and alarming systems and hierarchies shall also be included. This document shall be revised by the contractor during the course of the project and shall serve as the system functional testing procedure at the completion of the project. Owner review and approval of this submittal will be required prior to procurement of equipment, at the start of programming and for the functional testing submission.
- F. Provide operation and maintenance manuals for all equipment under provisions of Section 01700.
  - 1. Completed system checkout field report with copies of system response tests.
  - 2. Maps of sensing cable layout on vellum and on floppy disk directly readable by MicroStation (current SNL standard version).

#### 1.07 WARRANTY

- A. All contractor furnished products and labor shall have a two-year warranty.
- B. During warranty, all defective products shall be repaired or replaced, and all readjustments necessary to accomplish the specified sequences of operation shall be at no cost to SNL.

### PART 2 - PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Perm Alert.
  - 1. ATG gold sensing cable.
  - 2. JPL jumper cable.
- B. GEMS or equal, float switches, and intrinsically safe barriers as required for sump monitoring.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. Install equipment and wiring in accordance with the manufacturer's diagrams and recommendations.
- B. Provide number of zones for areas covered as shown on the Drawings.
- C. Connections for external wiring between the control unit and external devices shall be made on terminal strips installed in alarm/locator cabinets.
- D. Install the sensing cable assembly as shown in the Drawings. Position sensing cable as to minimize response time and false alarms.
- E. Install 1-inch PVC conduit as required.
- F. Install and support panels per Section 13085S, Seismic Protection.

### 3.02 FIELD QUALITY CONTROL

- A. The system shall be installed, tested, and adjusted under the supervision of manufacturer's representative.

### 3.03 SYSTEM TESTING

- A. The system shall be installed, tested, and adjusted under the supervision of manufacturer's representative.

### 3.04 MANUFACTURERS FIELD SERVICES

- A. Include services of factory certified technician to supervise installation, adjustments, final connections, and system testing.
- B. The manufacturer's certified technician shall provide Intel's personnel of instruction in the operation and maintenance of the system and test equipment.

END OF SECTION